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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,447	12/12/2005	Paulus Martinus Catharina Hesen	NL03 0692 US1	3088

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EXAMINER	
CHHAYA, SWAPNEEL	
ART UNIT	**PAPER NUMBER**
2895	

NOTIFICATION DATE	DELIVERY MODE
12/29/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/560,447	HESEN ET AL.	
	Examiner	Art Unit	
	SWAPNEEL CHHAYA	2895	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. In view of the appeal brief filed on 9/8/2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/N. Drew Richards/

Supervisory Patent Examiner, Art Unit 2895.

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the elements in Figs. 4-6 are unclear because the drawings are shaded and it is unclear what elements are being referred to as the examiner is unable to tell the elements apart. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 3, 4, 9, 10 and 12 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The features that discussed in the claims with regards to the means plus function elements are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Applicant has invoked 112 6th paragraph without disclosing the exact means in the specification, this would not enable

one with ordinary skill in the art to understand or reproduce the invention. It is unclear what the applicant is referring to with the terms “pusher means”, "pressure means”, “positioning means”, and “connection means”. The specification is unclear as it does not explicitly state what the means are exactly.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3, 4, 9, 10, and 12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding these claims see 112 1st rejection as stated above. It is also unclear and indefinite what structure applicant is referring to.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Heinlen et al. (U.S. Patent 3736367).

Regarding claim 1.

A lead frame provided with

A frame (2) having a first (6,18, 24) and a second (10,18, 24) connection conductor which connection conductors are each connected to the frame and (Fig. 1-5 column 2 lines 25-45)

Provided with a non-engaging end portion (24), where, after deformation, the end portion of the second connection conductor can be positioned opposite the first connection conductor (Fig. 1-5 column 2 lines 25-45)

A semiconductor element can be placed between said connection conductors, (Fig. 1-5 column 2 lines 55-65)

the end portion of the second connection conductor within the frame being positioned outside the extension of the first connection conductor, the second connection conductor adapted to deform such that, by bending along a bending axis which is at an oblique angle with respect to the longitudinal axis of the end portion, (Fig. 4-5 column 2 lines 25-45 column 3 lines 50-55)

Please note, it has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform it. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138.

Regarding claim 2. Heinlein discloses:

A lead frame as claimed in claim 1,

characterized in that the end portion (24) of the second connection conductor has been

brought to a position opposite the position of the semiconductor element (Fig. 4-5 column 2 lines 25-45)

The Limitation "by bending along a bending axis which is at an oblique angle with respect to the longitudinal axis of the end portion." is considered a product by process limitation and will not be given patentable weight.

The determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). A product-by-process limitation adds no patentable distinction to the claim, and is unpatentable if the claimed product is the same as a product of the prior art.

3. Claims 3-7, 9, 10, 11, 12, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Coldren (U.S. Patent 4252864).

Regarding claim 3.

A method of manufacturing a semiconductor

device comprising the steps of:

- providing a semiconductor element having a first and a second electric connection region which connection regions are situated at opposite sides of the semiconductor element (Fig. 1-5 column 4 lines 1-65)

-providing a lead frame as claimed in claim 2 (Fig. 1-5)

- fitting the semiconductor element between the end portions of the first connection conductor, where connection means are used to make electro-conductive connections between the connection regions and the end portions. (Fig. 1-5 column 4 lines 1-65)

Regarding claim 4.

A method of manufacturing a semiconductor device comprising

the steps of:

- providing a semiconductor element (16) having a first and a second electric connection region which connection regions are situated on opposite sides of the semiconductor element; (Fig. 1 column 3 lines 1-15)

- providing a lead frame having a frame with a first and a second connection conductor which connection conductors are each connected to the frame and provided with an exposed end portion; (Fig. 4 column 3 lines 25-30)

- applying the semiconductor element to the end portion of the first connection conductor an electro-conductive connection between the first connection region and the end portion being made by using a connection means; (Fig. 1)

- moving the end portion of the second connection conductor to a position outside the plane of the frame and opposite a location for the second connection region of the semiconductor element (Fig. 4-5)

- making an electro-conductive connection between the second connection region and the end portion of the second connection conductor by using a connection means,

characterized in that the end portion of the second connection conductor within the frame is positioned outside the extension of the first connection conductor and is brought to a position opposite the position for the second connection region of the semiconductor element by bending along a bending axis which is at an oblique angle with respect to the longitudinal axis of the end portion. (Fig. 4-5)

Regarding claim 5.

A method as claimed in claim 4,

characterized in that the end of the end portion of the second connection conductor is bent through approximately 90 degrees along the bending axis out of the plane of the frame, and the end of the end portion is bent, along a further bending axis extending substantially parallel to the bending axis and at a distance therefrom corresponding approximately to the thickness of the semiconductor element, through an angle of approximately 90 degrees to the position of the semiconductor element (Fig. 3-5)

Regarding claim 6.

A method as claimed in claim 5,

characterized in that the end portion of the second connection conductor is bent along the further bending axis or along another bending axis in such a manner that said end portion extends obliquely in at least one direction with respect to the end portion of the first connection conductor which contains the position for the semiconductor element (Fig. 3-5)

Regarding claim 7.

A method as claimed in claim 4,

characterized in that the semiconductor element is slid between the connection conductors after the end portion of the second connection conductor has been bent to a position opposite the location for the second connection region of the semiconductor element and opposite the end portion of the first connection conductor, the element being clamped between the connection conductors. (column 4 lines 10-25)

Regarding claim 9.

A method as claimed in claim 3,

characterized in that before the semiconductor element is slid between the connection conductors, the end portion of the first connection conductor is maintained in a depressed position by means of a pressure member, until the semiconductor element has been slid between the connection conductors. (column 4 lines 10-25)

Regarding claim 10.

A device for carrying out a method as

claimed in any one of claims 3 through 9, characterized in that the device comprises:

- a transport mechanism (2) for a lead frame with at least two connection conductors (Fig. 1-5 column 3 lines 1-25)

-positioning means for positioning a semiconductor element (Fig. 1-5 column 4 lines 10-

25)

- pusher means for pushing the semiconductor element in between the two connection conductors of which one is bent to a position above the position of the other one (Fig. 1-5 column 4 lines 10-25, 50-60),

means for bending an end portion of at least one of the connection conductors along a bending axis which makes an oblique angle with the longitudinal axis of the end portion. (Fig. 4-5 column 4 lines 10-35)

Regarding claim 11.

A device as claimed in claim 10,

which further comprises means for bending an end portion of at least one of the connection conductors along a bending axis which makes an oblique angle with the longitudinal axis of the end portion. (Fig. 4-5 column 4 lines 10-35)

Regarding claim 12.

A device as claimed in claim 10,

characterized in that it comprises pressure means for pressing downward one of the conductor tracks during the pushing against the semiconductor element (Fig. 1-5 column 2 lines 55-65)

Regarding claim 13.

A semiconductor device comprising:

- a semiconductor element which is provided with a first and a second electric connection region, which connection regions are situated on opposite sides of the semiconductor element (Fig. 1-5 column 3 lines 5-20)
- a first connection conductor having a contact, and facing away therefrom, an end portion which is electro-conductively connected to the first connection region (Fig. 1-5 column 3 lines 15-20)
- a second connection conductor having a contact, and facing away therefrom, an end portion which is bent along a bending axis which is at an oblique angle with respect to the longitudinal axis of the end portion, such that the end portion is situated opposite the second electric connection region, with which it is electro-conductively connected, while the contact is situated in the same plane as the contact of the first connection conductor (Fig. 1-5 column 3 lines 45-65 column 4 lines 1-30)
an isolating envelope which leaves contacts facing way from the end portions of the connection conductors uncovered. (Fig. 1)

Regarding claim 15. A semiconductor device as claimed in claim 13, characterized in that:
- the semiconductor element is a semiconductor transistor with a third connection region (Fig. 1-5 column 3 lines 45-65 column 4 lines 1-30)
- a third connection conductor is present, which has a contact, and facing away therefrom, an end portion which is bent along a bending axis which is at an oblique angle with respect to the longitudinal axis of the end portion, such that the end portion is

situated opposite the third electric connection region, with which it is electro-conductively connected, while the contact is situated in the same plane as the contact of the first connection conductor;(Fig. 1-5 column 3 lines 45-65)

- the second and the third connection conductor are situated on either side of the first connection conductor (Fig. 1-5 column 3 lines)

Regarding claim 16, A semiconductor device as claimed in claim 13, or a lead frame as claimed in claim 1, characterized in that the first connection conductor is provided with a hole at a distance from the position for the semiconductor element. (Fig. 5)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coldren (U.S. Patent 4252864) as applied to claim 13 above in view of Sakamoto et al. (U.S. Patent 6975022).

Regarding claim 8. Coldren discloses:

A method as claimed in claim 3, characterized in that

- a lead frame is chosen in which the first connection conductor is provided with a hole at a distance from the position of the semiconductor element (Fig. 5)

Coldren discloses the claim except for the semiconductor element being placed on the hole and fixed by means of a suction device and the pushing means.

Sakamoto discloses:

- the semiconductor element (15) is placed on the hole and fixed by means of a suction device (24, V) present below the hole, after which the semiconductor element is pushed between the connection conductors by means of a pusher member (Fig. 1-5-11 column 8 lines 30-60 column 9 lines 10-15)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to implement a suction device, and a pusher member as taught by Sakamoto, since *Sakamoto* states at column 8 lines 30-60 that such a modification would aid in mounting and fixing the semiconducting device.

Regarding claim 14.

A semiconductor device as claimed in claim 13, characterized in that:

Sakamoto discloses:

-the semiconductor element is a semiconductor diode (Fig. 1-5-11 column 12 lines 9-11)

Coldren discloses:

-The second connection conductor is u-shaped or j-shaped prior to

bending (Fig. 4)

(and

-the contacts of the connection conductors are in line with one another (Fig. 1-5)

Coldren in view of Sakamoto discloses the claimed invention except for the oblique angle range of the lead frame. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use such a range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller,* 105 USPQ 233.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SWAPNEEL CHHAYA whose telephone number is (571)270-1434. The examiner can normally be reached on Monday- Thursday 9:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on 571-272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SC

/N. Drew Richards/
Supervisory Patent Examiner, Art Unit 2895